MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

EEE7226
QUALITY SYSTEMS & MANAGEMENT

(All section / Groups)

16 OCTOBER 2019
2:00 P.M- 5:00 P.M.
(3 Hours)

INSTRUCTION TO STUDENT

1. This Question paper consists of 5 pages including cover page with 4 Questions only.

2. Attempt all **FOUR** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the answer Booklet provided.

Question 1

(a) Define Quality in system management.

[5 marks]

(b) Provide any FIVE(5) phases of continuous process improvement cycle.

[5 marks]

(c) Select a specific product or service such as television. Discuss how the eight dimensions of quality impact its overall acceptance by consumers.

[5 marks]

(d) Explain how can the teaching quality being defined in a university academic department organization.

[6 marks]

(e) Most of the quality management literature state that without top management leadership, quality improvement will not occur. Do you agree or disagree with this statement? Explain why you agree or disagree with this statement.

[4 marks]

Continued...

Question 2

(a) Provide TEN (10) leadership characteristics.

[10 marks]

(b) In managing a project in quality management, an important part is to identify the key process input variables (KPIV) and key process output variables (KPOV). Suppose that you are in charge of a hospital emergency room. Design the KPIVs and KPOVs for this business. How do they relate to possible customer critical to quality (CTQ)?

[5 marks]

(c) Assume that in one business is operating at the three-sigma quality level. The project has an average improvement rate of 50% annually. Assuming a 1.5σ shift in the mean and the percentage within the limits is 0.9331896. How many years will it take to achieve six-sigma quality?

[5 marks]

(d) In project management, assume that a car has gone out of control during a snowstorm and strikes a tree. Construct a cause-and-effect diagram that identifies and outlines the possible causes of the accident.

[5 marks]

Continued...

Question 3

(a) Provide THREE(3) advantages and THREE(3) disadvantages of sampling.

[5 marks]

(b) Provide reasons why benchmarking process is important in quality tools.

[5 marks]

(c) Assuming in one project, the fill amount of liquid detergent bottles is being analyzed. Twelve bottles, randomly selected from the process, are measured, and the results are as follows (in fluid ounces): 16.05, 16.03, 16.02, 16.04, 16.05, 16.01, 16.02, 16.02, 16.03, 16.01, 16.00, 16.07. Calculate the sample average and sample standard deviation.

[10 marks]

(d) In one electronic component project, assume that the time to failure in hours is subject to an accelerated life test is shown in Table 3. To accelerate the failure test, the units were tested at an elevated temperature (read down, then across).

127	124	121	118
125	123	136	131
131	120	140	125
124	119	137	133
129	128	125	141
121	133	124	125
142	137	128	140
151	124	129	131
160	142	130	129
125	123	122	126

Calculate the sample average and standard deviation.

[5 marks]

Continued...

Question 4

(a) In total quality management, provide the six basic elements to ensure a successful implementation initiative in an organisation.

[3 marks]

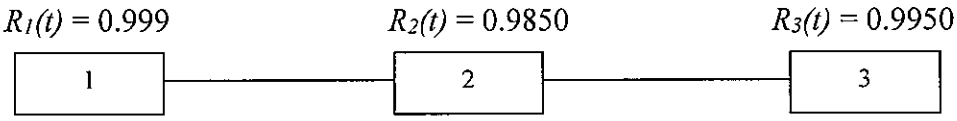
(b) Provide FIVE(5) reasons for Adopting ISO 900.

[5 marks]

(c) Define the six sigma project methodology.

[5 marks]

(d) Assume a series system is made up of three components, as shown in Figure 4(c). The reliabilities of each component at some pre-specified time t are shown in the figure. All components operate independently. Determine the system reliability.



[2 marks]

(e) Assuming you are the quality engineer and you are preparing the specifications on an electronic component. The mean time between failure (MTBF) must be above 5,000 *h*. The MTBF is normally distributed with mean 7,500 *h*. The manufacturer realized a price of \$10 per unit produced. However, defective units must be replaced at a cost of \$5 to the manufacturer. Two different manufacturing processes can be used, both of which have the same mean life. However, the standard deviation of life for process 1 is 1000h, whereas for process 2 it is only 500h. Production costs for process 2 are twice those for process 1. Given that $P(Z<2.5)=0.99379$, $P(Z<-2.5)=0.00621$, $P(Z < 5.0)=0.9999997129$ and $P(Z<-5.0)=0.000000287$. Determine the value of production costs which will determine the selection between processes 1 and 2.

[10 marks]

End of Paper